The University of Florida Electronic Delivery of Graduate Engineering (UF EDGE) program provides online delivery of graduate engineering courses to a worldwide audience of distance learning professionals. We enable working engineers to continue their education while maintaining their current career and family obligations.

UF EDGE offers the same high-quality University of Florida engineering courses to both on-campus and distance learning graduate students, providing same-day availability to distance-learning students in streaming video and podcast formats. Lectures are available online all semester making it easy for students to go back and review material before exams. Distance learning students submit coursework online or via fax and interact with professors and TAs using email, phone and course websites; students are never required to travel to campus. Exams are proctored at their place of work and are faxed in for grading.

A master's degree is comprised of 10 courses which totals 30 credit hours. Students can take as many courses per semester as their work and life schedules permit, thus setting their own pace towards their degree. Students earn the exact same master's degree as they would sitting in a UF classroom, there will never be any mention of "distance learning" anywhere on the students diploma or UF transcript. We also work with companies that support continuing education with the option for either the student or the company to pay tuition based on how their human resources office is set up to finance continuing education.

UF EDGE offers the best courses for today's workforce, and we are happy to work with companies to develop degree and certificate programs that will help promote their goals.

Below is a descriptive list of the Metals specialized Master of Science degree program we will be offering online starting the Fall 2008 semester from the Materials Science and Engineering Department here at the University of Florida.

Please let me know if you have any questions or if you would like to discuss this or any of our degree and certificate programs further and I look forward to helping you or your engineers and scientists continue their education through the University of Florida.

Best Wishes,
Pamela Dickrell

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University of Florida
UF EDGE
Electronic Delivery of Graduate Engineering

University of Florida Department of Materials Science and Engineering
Online Master of Science Degree Specializing in Metals

A master's degree is comprised of 10 courses, which totals 30 credit hours. Students can take as many courses per semester as their work and life schedules permit, thus setting their own pace towards their degree.

The 10 courses comprising the structure of the online metals specialized degree program consists of 5 core fundamental materials science courses, 2 metals specific courses and then your choice of 3 elective courses based on your interests.

Students must take the following 5 Core Materials Science Courses:

EMA 6313: Advanced Materials Principles 1:
Structure and behavior of materials. Crystal structure, bonding, order and disorder in solids, phase diagrams and phase transitions, mechanical, optical, and electrical properties.

EMA 6316: Materials Thermodynamics:
Thermodynamics of materials systems, surfaces in solids, irreversible processes.

EMA 6136: Diffusion, Kinetics, and Transport Phenomena:
Physical basis, equation, and theories of diffusion, tracer, chemical, multi-component, and multiphase diffusion in general force fields.

EMA6938A: Advanced Materials Principles 2:
Prereq: EMA6313. Structure and behavior of materials. Structure, properties, processing, and applications of semiconductors, metals, ceramics, polymers, and biomaterials. Structure and properties of thin films, surfaces, and interfaces.

EMA 6808: Error Analysis and Optimization Methodologies in Materials Research:
Statistical approach to materials research, basic and relevant statistical concepts, error analysis, factorial matrices, reducing variance, nested designs and sampling plans, mixture designs, optimization techniques, response surface method, and Taguchi method.

Students in the Metals Program take the following 2 metals courses:

EMA6107-High Temp Materials:
Physical and mechanical metallurgy. Principles of strengthening alloys, alloy and process selection, alloy development, and design principles for elevated temperature applications.

EMA6625-Advanced Metals Processing:
Advanced treatment of solidification phenomena during metals processing. Topics to include nucleation, kinetics, solidification structure, segregation, and effects of processing variables on structure and properties.

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Students in the Metals Program can then choose any 3 of the following courses to complete their 10 course (30 credit hour) master's degree:
(note: there is flexibility to substitute other UF EDGE courses for these 3 if desired)

EML 6507: Wear of Materials:
The wear and friction of materials, laboratory equipment used in tribological investigations and theoretical and empirical models for wear.

***EAS 6242: Advanced Structural Composites*:**
Micro- and macro-behavior of a lamina. Stress transfer of short fiber composites. Classical lamination theory, static analysis of laminated plates, free-edge effect, failure modes.

EML 5526: Finite Element Analysis and Application:
Prereq: undergraduate mechanics of materials Fundamentals, including discrete system analysis, dynamic analysis of structures, steady state and transient heat transfer analysis, and incompressible fluids analysis. Modeling, analysis, and design using FEA software.

EML6934B: Failure of Materials in Mechanical Design:
Fatigue life of machine elements subjected to steady and alternating multi-axial stresses; Fatigue life analysis using stress-life approach, local strain-life approach, and fracture mechanics; high cycle and low cycle fatigue; Damage tolerant life prediction methods.

EMA 6507: Scanning Electron Microscopy and Electron Probe Microanalysis:
Fundamentals of scanning electron microscopy and electron probe microanalysis.

EMA 6510: Survey of Materials Analysis Techniques:
Principles and techniques used in characterization of materials. Chemical, microstructural, and surface analysis of materials; metals, ceramics, polymers, and semiconductor systems.

EMA 6938: X-ray Methods of Materials Analysis:
Provides principles and fundamentals, data reduction and interpretation for different methods of characterization and analysis of materials using x-ray diffraction techniques.

EGM 5533: Applied Elasticity and Advanced Mechanics of Solids:
Bars, beams, thin-walled structures, and simple continua in the elastic and inelastic range. Virtual work approaches, elastic energy principles, plastic limit theorems, and creep deformation procedures. Introduction to instability and fracture mechanics. Design applications.

EGM 6570: Principles of Fracture Mechanics:
Introduction to the mechanics of fracture of brittle and ductile materials. Linear elastic fracture mechanics; elastic-plastic fracture; fracture testing; numerical methods; composite materials; creep and fatigue fracture.

Additional UF EDGE Online Engineering Departments

We offer online graduate courses and degree programs from seven of our Departments in the University of Florida College of Engineering. If your area of interest or specially lies in one of these other areas I would be happy to send you more information or discuss any of these engineering departments.

Department of Civil & Coastal Engineering

Construction Engineering
Construction Engineering II
Traffic Engineering
Construction Planning and Scheduling
Geo Systems I
Geo Systems II
Public Works Planning
Traffic Flow Theory
Engineering Project Management
Design of Temporary Structures

Department of Computer & Information Sciences & Engineering

Analysis of Algorithms
Database Management Systems
Programming Language Principles
Computer Architecture Principles
Software Engineering
Operating System Principles
Computer Networks
Advanced Data Structures
Software Testing and Verification
Bioinformatics
Computer and Network Security
Computer Communications

Department of Environmental Engineering Sciences

Ecological & General Systems
Ecological Engineering
Wetland Treatment Systems
Energy Analysis
Spring Systems
Advance Environmental Planning and Design
Water Resources Planning & Management
Global Environmental Policy
Advanced Environmental Resources Management
Principles of Industrial Ecology
Stormwater Systems Design
Environmental Health
Biological Wastewater Treatment
Advanced Energy and Environment
Public Works Planning
Natural Resources and Environmental Policy
Water Resource Sustainability

Department of Electrical & Computer Engineering

Wireless Networks
Bipolar Analog IC Design
MOS Analog IC Design
Wireless Communication
Digital Communication

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Pattern Recognition and Intelligent Systems
VLSI Circuits and Technology
Noise in Linear Systems
Foundations of Digital Signal Processing
Semiconductor Device Theory
Introduction to Quantum Mechanics for Nanodevices

Department of Industrial & Systems Engineering
Systems Engineering Management
Systems Architecture
Deterministic Methods in Operations Research
Applied Probability Methods in Engineering
Advanced Engineering Economy
Digital Simulation Techniques
Models for Supply Chain Management
Advanced Production and Inventory Control
Stochastic Modeling and Analysis

Department of Materials Science & Engineering
Thermodynamics
Material Structure and Defects
Diffusion, Kinetics, and Transport Phenomena
Electron Theory of Solids for Materials Scientists
Advanced Metals Processing
Electronic Ceramics
Science of Biomaterials
Computational Materials
Polymer Physical Science
Error Analyses and Optimization Methodologies in Materials Research
Electronic Theory of Materials
Advanced Electronic Materials Process
Survey of Materials Characterization Techniques
Scanning Electron Microscopy
X-Ray Techniques
Transmission Electron Microscopy
High Temp Materials
Advanced Metals Processing

Department of Mechanical & Aerospace Engineering
Analytical Dynamics
Geometry of Mechanisms and Robots
Principles of Engineering Analysis
Control System Theory
Structural Dynamics
Robust Control Synthesis
Nonlinear Control
Numerical Methods of Engineering Analysis
Failure of Materials in Mechanical Design
Continuum Mechanics
Principles of Fracture Mechanics
Finite Element Analysis and Applications
Applied Elasticity and Advanced
Mechanics of Solids
Structural Dynamics of Production Machinery
Introduction to Compressible Flow
Conduction Heat Transfer
Classical and Statistical Thermodynamics
Convection Heat Transfer
Fluid Mechanics
Wear of Materials